
MEDICAL LABORATORY TECHNICIAN

What is a Medical Laboratory Technician?

Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease. *Medical Laboratory Technicians* are trained to work under the supervision of a Technologist to conduct routine diagnostic tests, as well as set up, clean and maintain medical laboratory equipment. As a Medical Laboratory Technician, you will be responsible to draw blood, accept body fluid sample(s) and tissue specimen(s) from patients, as well as log patient samples and prepare them for testing. You will perform laboratory procedures such as preparing specimens for testing, preparing culture media and stock solutions, and recognizing problems and errors in lab procedures. Medical Laboratory Technicians use automated equipment and computerized instruments capable of performing a number of tests simultaneously, as well as microscopes, cell counters, and other sophisticated laboratory equipment.

Program Objectives / Job Opportunities

Our *Medical Laboratory Technician Diploma Program* emphasizes the importance of hands on training. Being proficient in blood collection, performing ECG's, and the use of various laboratory equipment(s) are as vital as learning the theory behind the practice. All of our students learn about the value of patient communication and patient care as interpersonal skills are a fundamental part of being a successful Medical Laboratory Technician.

Our students have the advantage of working within our fully equipped and automated diagnostic laboratory. With the training we offer in our modern and up-to-date facilities and led by our highly qualified Instructors, graduates will have the competitive edge when seeking employment. Upon successful completion of our program, students are eligible to sit for both the National and Provincial certification exams through the Canadian Society of Medical Laboratory Science (CSMLS) and Medical Laboratory Professionals' Association of Ontario (MLPAO) formerly the Ontario Society of Medical Technologists OSMT). Our program provides our students with an online review class and mock exams to assist in preparing for the certification process.

Rewarding career opportunities can be found in a variety of areas including:

Hospitals	Addiction Centers	Home Health Care
Insurance Companies	Private laboratories	Doctors' Offices
Clinical Research	Blood Donor Clinics	

Course Details:

Full-Time	In-Class Schedule	Monday – Friday
50 Weeks	Practicum Schedule	Monday – Friday*

Medical Laboratory Technician Program includes in total 1105 hours of academic training (50 weeks). The academic training is made of in-class hours (theory) and laboratory hours (practical skills). The program also includes an additional 225 hours of practicum which is completed at the end of the didactic portion of the program. The total technical and practical hours are 1105 of in-campus and off campus practice throughout the whole program. The student will have completed a minimum of 50 successful Venipunctures/Phlebotomies and passed a written and practical exam prior to beginning of their practicum.

* All students REQUIRE a minimum of 225 hours (6 weeks) of practicum to successfully complete the program. Hours of practicum may vary depending on the particular location of the practicum. Students must submit a Police Check of Criminal Record and Immunization Report within 30 days of starting the program.

COURSE OUTLINE

- Ethics, Professionalism and Legislation
- Anatomy, Physiology, and Medical Terminology
- Safety and Laboratory Fundamentals
- Hematology Fundamentals
- Laboratory Skills Foundation
- ECG and the Heart
- Midterms
- Quality Assurance and Laboratory Math
- Clinical Chemistry
- Urinalysis and Body Fluids
- Microbiology
- Cytology and Histology
- First Aid CPR
- Student Success Strategies
- Introduction to Computers
- Finals
- Practicum

Student Success Strategies

This course focuses on strategies for increasing student success in college and life. The course explores methods for choosing and developing effective academic, self-awareness and self-management strategies. Students will learn how to become an integral part of the college community and maximize their learning capacities. They will know how to use college resources and build relationships with fellow students and instructors. The course also emphasizes understanding of human interdependence, diverse cultures, values and perspectives of the college community.

Introduction to Computers

This course will provide students with the ability to understand the basic components of the computer, how the operating system works, tips and techniques to search and locate information on the internet. In addition, students will learn proper keyboarding techniques to improve their speed and accuracy. In addition, his course teaches students how MS Outlook is structured, and how to use the various modules to coordinate communications and collaborations with others.

Ethics, Professionalism, and Legislation

This course will provide students with knowledge of the standards of practice, Ethics and Legislation governing Medical laboratory Assistant/Technicians. The emphasis of this course is placed on laws, regulations, various acts, ethical and legislative framework that influence the practice of Medical technology. Students will learn the proper code of ethics and standards that govern the medical field. One of the main functions of this course is to provide student with an understanding of the necessary policy and procedures they will encounter during their careers. This module will also introduce the student to the structure of the medical setting and the importance of the organizational flow in which a clinical laboratory operates.

Anatomy, Physiology, and Medical Terminology

This module will introduce the student to the anatomy and physiology and medical terminology. During the first week, the student is introduced to fundamental notions necessary to understand medical terminology. This is provided in the context of anatomical structures and abbreviations commonly used in the healthcare field. The emphasis of this course is focused on the proper use of medical terminology such as prefixes, suffixes and root words. The rest of the module will be covering the structures and functions of each body system and how they work together to carry out routine functions. We also highlight the link between disease development and progression and how we correlate to the diagnostic testing conducted in a licensed medical laboratory.

Safety and Laboratory Fundamentals

This module will introduce the student to the concept of safety in the laboratory environment for both patients and medical laboratory assistants. This module will cover general safety measures to ensure a safe and sterile environment by following the proper procedures. Students will learn how to safely and effectively use and maintain laboratory equipment. Students will also study the Transportation of Dangerous Goods in which a certification of completion will be awarded. Safety issues in the medical workplace, including handling, storage, and disposal of biological hazards and pathogens will be discussed and taught following government regulations and guidelines. In addition, students will be introduced to the fundamentals of proper communication, both verbal and non-verbal, and learn administrative tasks in areas such as patient documentation, filing and appointment scheduling. An early introduction into the body systems, collection containers, and blood collection tubes are also explored, and will be covered in more detail in the following modules.

This module will also cover:

WHMIS and Hazardous Material Symbols; TDG Certification; Universal Precautions; Isolation; MSDS; Fire Safety, Evacuation Plans, (Fire Extinguisher demonstration); and Accident/Incident Reporting

Hematology Fundamentals

This module will introduce the student to the laboratory procedures involving blood cell formation, coagulation, transfusion medicine and immunohematology. They will be learning the appropriate hematology lab policy and procedures, including specimen collection and processing techniques. Students will be learning about the different components that make up blood, such as red and white blood cells, platelets and plasma. The course is a combination of theory and technical procedures to cover:

Manual and automated blood counting; Differential Cell Count and RBC indices; Capillary Puncture – Blood Smear and Staining; Reticulocyte Count; Bleeding Time; and Laboratory Safety within the Hematology department

ECG and the Heart

This module will introduce the student to the anatomy and physiology of the Cardiovascular System. Students will proceed to learn about lead positions and the proper technique in performing ECGs. The various ECG equipment and supplies will be covered, as well as exploring the different functions and use of the machines. Students will put their practical skills to use on the Burdick EK 10, Burdick 350, Telemed and Computerized ECG. Students will also learn the function and set-up of Holter Monitors. The students will learn how to monitor vital signs and recognize reportable values. This will offer the students an extensive understanding of the anatomy and physiology of the heart.

This module will also cover:

Standardization of ECG Machine; Cardiac Cycle (wave diagram), voltage/time; Artifacts-Identification and Solutions; and Blood Pressure Equipment and Measurement.

Quality Assurance and Laboratory Math

This course will provide the students with solid mathematical foundation for use in the medical laboratory. It includes a basic understanding of mathematics, measurements, dilutions, solutions, logarithms, graphs, statistics and quality controls. In addition, the students will be introduced to the concepts of quality control and quality assurance in the laboratory.

This module will also cover:

Maintenance of an efficient laboratory; Reagent Preparation; Solution Preparation; and Laboratory Safety

Clinical Chemistry

This will provide the students with extensive knowledge of clinical chemistry. They will also be taught the correct procedures of chemistry during the labs. The course will establish a well-rounded knowledge base for students covering both the theoretical and practical aspects of clinical chemistry. Also the students are exposed to the concept of quality controls, quality assurance and different methodologies including automation.

Urinalysis and Body Fluids

This course will provide students with an understanding of Urinalysis as performed in a routine laboratory or clinic. Students will learn the basic anatomical structures of the renal system and identify the various components. Also covered will be each aspect of the study of urine in diagnosis, management and treatment of various diseases. Other body fluids will be also studied as their analysis can assist the physicians in determining the patient's illness.

This module will also cover:

Equipment used: Chemstrip 5L and Clinitek; ABO Grouping; Rh Typing; Antibody Screening; Pregnancy and Mono Testing; and Laboratory Safety within the Serology, Urinalysis and Chemistry Departments

Microbiology

This module will first introduce the student to the major classes of microorganisms. This module will provide the students with an understanding of the techniques used to inoculate specimens using the appropriate media and incubation conditions. The students will learn about common media used in a microbiology laboratory.

This module will also cover:

Stages of Infection - Diagnosis and Isolation; Inoculating: Agar Media, Agar Slant Tubes, Culture Broth Tubes, Automated Planting Machine; Distinguishing between selective and non-selective media and enriched and differential media; Incubation: Correct time and temperature, Anaerobic Conditioning, Increased Co2 Tension
Identification of Bacteria; Virology: HIV, Hepatitis B; Parasitology; Specimen Collection for Microbiology & Safety Technique; Methods of destruction of Microorganisms; and Laboratory Safety within the Microbiology Department

Histology and Cytology

This module will introduce the students to histology and cytology; including specimen reception, accession, and rejection, as well as specimen processing, staining, and microslide cover slipping. The importance of understanding cross contamination risks and the proper procedures required during specimen processing and staining are also covered in detail.

This module will also cover:

Cell Block Preparation (Application in Cytology only); Direct Smear Preparation; Filtration – Nucleopore and Millipore; Staining Sequence; Romanowsky, Papanicolaou and routine H & E stains; and Laboratory Safety within the Histology and Cytology Department

Laboratory Skills Foundation

The purpose of this course is to teach students the various pre-analytical skills they will need to become a Medical Laboratory Assistant/Technician. The skills they learn in this course will correspond with the theory classes they are taking. They will learn how to properly perform phlebotomy and continue to work on that skill throughout the program. They will learn the skills needed in Hematology, Clinical Chemistry, Quality Assurance, Urinalysis, Microbiology, and Cytology and Histology. This course will run concurrently with theory courses. The integration of the competency guidelines for the Medical Laboratory Professionals' Association of Ontario (MLPAO) formerly the Ontario Society of Medical Technologists (OSMT) and the Canadian Society of Medical Laboratory Science (CSMLS) will be applied throughout the course.

Practicum

This portion of the program provides the student with a full time practicum. This course experience allows the student an opportunity to gain actual working knowledge of laboratory processes that have been taught during the program.

What is a Medical Laboratory Technician/Assistant?

A Medical Laboratory Technician performs a vital role in the medical laboratory team. They are trained in the collection of specimens from patients, the initial processing and preparation of specimens for analysis, data entry, clerical services, performance of electrocardiograms (ECG's), and a variety of basic laboratory procedures.

Anderson College of Health, Business and Technology Medical Laboratory Technician Program prepares you to apply for employment in a variety of laboratory setting. The program consists of theory, practical skills, and practicum components which have been mapped to the *Canadian Society for Medical Laboratory Science (CSMLS)* and *Medical Laboratory Professionals' Association of Ontario (MLPAO)* Competency Profile for the Medical Laboratory Assistants. Upon successful completion, you will receive an Anderson College Diploma which will allow you to sit the *CSMLS/MLPAO* Exams. The costs associated to these exams will be the responsibility of the applicant. Please visit the *CSMLS and MLPAO* website for more information with regards to the certification exams.

General Duties

- Participate as an important member of the laboratory team
- Provide patient reception and documentation
- Use correct techniques to safely collect blood specimens
- Provide information to patients regarding proper collection of specimens other than blood
- Appropriately handle and distribute specimens to be analyzed by other members of the laboratory team
- Maintain a safe working environment
- Perform electrocardiograms (ECG's), applying an understanding of heart activity and heart electrical conductivity

Personal Qualities for Success

The following personal attributes are recommended for success in this program:

- Have a strong sense of responsibility, a caring nature, an interest in the well-being of others, particularly the sick and elderly
- Demonstrate good interpersonal skills, communication, and dependability
- Enjoy performing precise work, where details can be a matter of life or death
- Enjoy being a member of productive, disciplined team
- Be able to complete repetitive tasks accurately
- Maintain accuracy even in stressful or emergency situations
- Be willing to take direction and work competently without constant supervision
- Truly care about and find satisfaction in providing service to people
- Is conscientious regarding safety issues

Health Considerations for the Program and Career as a Medical Laboratory Technician

Please consider the following when applying to the program.

Medical Laboratory Technician's should:

- Have good physical fitness and mental acuity; this includes good eyesight and hearing
- Have good manual dexterity and enjoy working with your hands
- Be prepared to be exposed to the symptoms of hospitalized patients. As in most health care professions you will be in close contact with infectious diseases.
- Have good back and neck health. This work requires lengthy periods of time standing and bending.
- Recognize that the profession is both physically and mentally demanding and therefore must be able to cope well in a stressful environment
- Be prepared for extensive handwashing. As a Medical Laboratory Technician, you must wear gloves while performing each procedure and will also wash your hands frequently using soap. Some people with skin disorders find the wearing of latex and other types of protective gloves, and the frequency of hand washing worsens their condition.
- Those with latex allergies will encounter exposure to latex products.
- Any prospective students with back, neck, or arm injury or serious skin disorders such as psoriasis, eczema, dermatitis or latex allergy should consider carefully before making application to this program. If any of these are concerns for you, we suggest you discuss this with your physician.
- Hepatitis B and the flu vaccine are required and are available at any walk-in clinic or through your physician.
- Those with anxiety to the sight of blood or other body fluids should reassess this profession.
- Be prepared to work with both females and males

Students with significant health challenges are advised to discuss concerns with their physician prior to applying.